AI Projects:

How to Add Predictability to the Unpredictable

Co-created by

Emerj Artificial Intelligence and **Daitan**

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Introduction

Increasingly, technology and business leaders look to AI project managers to make the execution (and success) of their AI projects more predictable. Executives and decision makers want AI projects to mature so they are more like the software development projects that have been with us for a generation. But, any AI project manager hoping to deliver on those expectations knows that success in AI projects requires an end-to-end thinking rarely found today.

A winning approach to an AI project needs to go beyond just thinking about goals and expected outcomes. It requires a holistic approach that encompasses:

→ Identifying data sources that support algorithms

→ Adopting the right tools

→ Implementing quality testing practices

→ Executing ongoing monitoring and optimization

Software development and AI projects share many similarities. Both have high costs, risks, and promised benefits. Both require finding and securing:

→ Hard-to-find specialized talent

→ Expensive, complex infrastructure

→ Defined business/technical goals and metrics

But, why are the risks so much higher on AI projects? First, sourcing and securing talent emerges as a key challenge for AI projects as they grow increasingly complicated. Simply put, while it's difficult to find an experienced software developer, the task grows much more difficult when recruiting efforts turn to finding an experienced data scientist.

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Perhaps the biggest challenge comes in creating a well-defined set of business goals and metrics. While this can be challenging for a software project, it becomes even harder for an AI project. AI project leaders must create and foster executive AI fluency by overcoming the misconceptions that the rapid advent of AI science has created.

Educating executives that there is no magical black box with AI becomes mission-critical so that the development and execution of the project can satisfy the right expectations. Walking executives through the rigorous and demanding processes of data iteration and data cleansing helps align them to the road that leads to a successful project outcome.

Beyond these risks lie the challenges specific to AI. These include data-related issues like the quality and quantity of the information available, data compliance, privacy protection, data ethics, and the explainability of the data, models, and the results they create.

Like software projects, AI projects face a high failure rate if team members — and those charged with holding them accountable — fail to see the project as an end-to-end process. It is equally important to assess and validate assumptions up front. Uncertainty runs rife in the early stages of any project, but this uncertainty can multiply without the investment of time and expertise into validation and assessment before the organization commits to large implementation budgets calling for the investment of time, money, and people.

> " *You can't think of AI projects as just another software project. They just aren't the same. Software is well understood, more predictable even for complex projects. AI has added complexity. Not only developing a model to achieve the right results, but also iterating sufficiently to ensure it scales to production data, and merges into a company's release processes, which largely are based on standard workflows for software projects. For bigger companies, it's less of a problem. But, for smaller and mid-sized companies, the risks and potential pitfalls are much more widespread — and can often lead to project failure.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

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Handling the Challenges of AI Deployment

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For AI projects, the stakes rise high at small and medium-sized businesses (SMEs). Almost always lacking the technical expertise and massive budgets available to larger firms, the costs of errors and bad choices at smaller companies cut more deeply. This makes the close monitoring and analysis of AI projects a critical priority for SMEs. If an AI project fails at a smaller enterprise, leaders and stakeholders may lack the resources, momentum, and desire to try again.

Thankfully, strategies exist that can help you manage the challenges of AI deployment. They break out into three general categories:

→ Talent and infrastructure

→ Goals and metrics

→ Data

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Talent and Infrastructure
Right People, Right Resources

> " *AI deployment requires a team and the appropriate infrastructure, and hiring a data scientist is what some companies will do, but that doesn't enable them to get products into production and achieve their objective. They need data engineers, QA, DevOps. They need people with some experience in data-related products and software development.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

To truly get the right expertise on an AI project, companies need to expand beyond just hiring a data scientist. They need to build out a team that will include people who understand the problem the solution will solve and people who can build the algorithm.

Companies need to consider who will get the data, build the initial proof of concept (POC), and who will scale it. Data scientists cannot do it alone. The critical component in building out an AI-enabling human resource strategy is to invest in people who can deliver value and infrastructure. Those people, even if your company were to be gifted with a magical black-box solution, must still convert that AI into something that will deliver the value you need and expect.

Goals and Metrics
Making Them Realistic

How do you arrive at a project plan and expectations that are realistic? Thankfully, multiple ways exist to get there, and many come from tried-and-true project management techniques that have been with us for a long time.

"Set up points in time" Panaggio advises, "go, no-go situations. Use tools like Louis Dorard's [Machine Learning Canvas](#). Just drawing insights from it, you can see where your problems map and what value you're creating. You can anticipate costs, understand requirements, and see where you lack data." By doing the prep work, discussing it, and establishing checkpoints to review progress and concerns, the goals and metrics may become more than just realistic, they may become achievable.

The size of the project relative to your company informs your goals and metrics too. During the assessment phase of your project plan, you can determine the size of the team you need. For smaller projects, a domain expert might be sufficient. But, through assessing the project and its requirements, you may learn that you need more people to handle the data and understand the project workflow and necessary skills.

You may learn that you need dedicated resources to handle:

→ Data

→ Data sources

→ Infrastructure

→ Testing

→ Software

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The Importance of Data

To get good AI project results, you need good data — and in the right amount. Nowhere else will the **"Garbage In, Garbage Out"** mantra ring truer. Machine learning models live on data. Without it, AI models — and your AI project — risk failure because they won't be able to deliver outcomes that are meaningful to the business. Key factors to consider when you are evaluating your data are its quality, quantity, and, of course, its compliance with prevailing regulations.

When evaluating your data, it is important to consider how you collect and store it. Consider: is it ethical what you are doing with the data? This consideration departs from the concerns you face on most software projects. While the ethics of data rarely rise to a primary concern in a conventional software project, if you don't prioritize data in an AI project, the project will most likely be doomed from its very start.

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> " *As one of your very first steps, check your data, its quality, quantity, and that it's ethical. If you don't, you'll build your project on something that's not solid. If you don't do it right, it won't be sustainable.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

In the end, the success of the project comes down to the team's ability to commit to end-to-end thinking. Important for software projects, end-to-end thinking opens team members' eyes to the need to bring together cross-functional teams much earlier during the project, often during the assessment phase. From defining goals to delivering on milestones and objectives, the right teams, the right infrastructure, the right set of steps and checkpoints, and the right contingency plans help software — and AI — projects succeed.

But, with AI projects, it's even more complicated. It is the first step that is most important: **Assessing and validating your assumptions up front**.

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Setting Yourself
Up for Success

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Don't start an AI project with poorly defined goals. You'll put your project **at risk**. To start a project right and reduce risks from the start, "you rely on an assessment phase accomplished through one or more PoCs, MVP, and the like," explains Graham Holt, GM, Digital Solutions at Daitan. This helps you answer questions like:

→ **Are your goals, metrics, and milestones well-defined and measurable?**

→ **Do I have data? Is it good, enough, and well-understood?**

> " *The assessment phase can produce valuable insights that shape future phases and this is especially helpful when confronting the unique complexities of AI projects. The best way to set yourself up for success in an AI project comes down to planning.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

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Good Planning = Good Goals, Metrics, and Milestones

If you're leaving for a trip, how do you get there without knowing where to go or how to get there? The map guiding every successful AI project is its goals and milestones … and the metrics you'll evaluate along the way to gauge project progress.

To get goals and milestones that actually mean something, you need to understand the project's data and the underlying needs of the business. Sometimes, a project management tool can help an AI's project's viability — and how realistic it is.

> *We have software processes, and they can be successfully transferred to AI projects. We've been doing that for a while. They may need adaptations to optimize. Of course, Machine Learning Canvas and the ML Project Checklist are designed to help people work efficiently through an AI project.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

Indeed, frameworks like ML Canvas and Checklist can help teams define the goals of their projects and determine the information they need. This clear definition of goals and needs helps project teams get executive buy-in from stakeholders in the business, in finance, and in IT. It can also help them track budget-versus-actual results for the project and report them to those stakeholders while the project is ongoing.

Learn more about Louis Dorard's Machine Learning Canvas through this on-demand masterclass. **Explore ML Canvas**. Listen as Daitan's Ivan Marin discusses how to accelerate projects remotely with Dr. Dorard.

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Do I Have Good Data?
The Three Tests

Good data forms the backbone of an AI project. Without it, the project will fail in delivering value. But, in a world that often equates good data with a lot of data, how does a project team define what good data means?

- **Good Data is accurate, reliable, and well-structured.**

  When you have good data, your teams can extract value from it and arrive at accurate, reliable, repeatable decisions through the model.

- **Good Data follows the rules.**

  Data needs to comply with prevailing laws and regulations. If you have data, but retrieved it by illegal or unethical means, you cannot and should not use it.

- **Good Data needs the right infrastructure.**

  Data cannot just be a file on a computer. It needs the right architecture and tools to become information. Without those, that data just won't help you accomplish much.

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It's Good Data. But, Is it Good for AI?

Good data does not necessarily mean it is good data for your AI project. Even in data-driven organizations, leaders need to ask not just whether their data is usable, but if it is useful as well.

Even good data that is accurate, reliable, well-structured, and compliant could be junk food for your AI project. Just like in humans, you can feed junk food to your machine learning algorithm, but it will not grow stronger and better. It will just survive.

> " *Useful data teaches your model about the real world, the one you are seeking insights about. That data comes from a reliable source and meets the checkbox requirements of your lists, but it also will continue to be available once your project goes live, and as refreshments of that data become available.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

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Conclusion

> " *Ask yourself, am I getting to the right result? Am I defining my goal right? After all that time and money, you risk getting nowhere. You try again. And try it again another way. You really have to check the data at the beginning or you risk getting surprises. Ask: Do I have data? Is it good? Is it going to give the models everything they need? Is the data you have enough to create the models? You might need to collect more data, augment with third-party data, or generate more data.*

Ricardo Luis Zanetti Panaggio
Data Scientist at Daitan

In the end, AI projects often — if not always — require even more discipline, planning, and resources than software engineering projects. AI projects also need rigor and expert execution. They require an end-to-end thinking mindset even before you might know what those 'ends' are.

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About Daitan:

Since 2004, clients have trusted Daitan to build core technology, data solutions and software products that scale with real-time performance. They rely on Daitan because we deliver quality results, while de-risking projects and accelerating time-to-market. From well-funded start-ups to global Fortune 500 enterprises, Daitan's clients span a wide variety of industries.

We work hard to develop extraordinary products for our clients that assure their success and make Daitan strategic to their growth. We see every employee as an individual with valuable ideas and contributions that will help shape our future, and we believe in our responsibility to cultivate their professional and personal growth. We make time to share important moments with our families because they are part of Daitan too. And, we believe in giving back to our Community because that is how everyone thrives.

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About Emerj Artificial Intelligence Research:

Emerj Artificial Intelligence Research is a market research and advisory company focused exclusively on the business impact of AI.

Companies that thrive in AI disruption run on more than just ideas. They leverage data and research on the AI applications delivering return in their industry today and the AI capabilities that unlock true competitive advantage into the future - and that's the focus of Emerj's research services.

Leaders in finance, government, and global industries trust Emerj to cut through the artificial intelligence hype, leverage proven best-practices, and make data-backed decisions about mission-critical priorities.

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